

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：經濟學甲【企管系甲班碩士班甲組】

題號：4109

共 1 頁 第 1 頁

答題注意事項：請盡量表達你的經濟邏輯，對於分數將具有顯著影響。

1. 請回答下列問題：(共 30 分)
 - (a)何謂劣等財(Inferior good)？何謂季芬財(Giffen goods)？(5 分)
 - (b)承上，你覺得「季芬財一定是劣等財」，還是「劣等財一定是季芬財」？為什麼？(10 分)
 - (c)試在同一圖形上畫出完全競爭結構下個別廠商的一般 AC, AFC, AVC, 及 MC 等線段來表達四者之間的關係。(5 分)
 - (d)承上，請利用圖形並配合文字說明來推導完全競爭結構下個別廠商的短期供給曲線。(10 分)
2. 請以經濟角度來闡述你的論點。(每小題 10 分，共 20 分)
 - (a)你覺得價格愈貴的商品其市場價格差異較大，還是價格較便宜的商品其市場價格差異較大？為什麼？
 - (b)會計利潤(accounting profit)、經濟利潤(economic profit)、以及經濟租(economic rent)三者對於商業經營有何意涵？
3. 平均勞動生產力(average labor productivity)的變動受許多因素影響，請舉出三個因素並分別扼要說明其內涵。(15 分)
4. 假設國際石油危機致使總合供給(aggregate supply)下降，造成物價上升，產出減少。如果政府政策沒有改變，那麼利率會如何變動？請說明原因。(15 分)
5. 某些經營者認為因為他的事業不涉及進出口，個人與家人也沒有出國旅遊、留學、或海外投資的需求，因此不需要關心我國外匯市場的相關問題。請評論上述想法。(20 分)

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：經濟學乙【企管系甲班碩士班乙組】

題號：4106

共 1 頁 第 1 頁

答題注意事項：請盡量表達你的經濟邏輯，對於分數將具有顯著影響。

1. Assume that the market supply curve of a book is given by $Q_s=3500+200P$. The demand for the book can be segmented into two components. The first component is the demand for the book by students. This demand is given by $Q_s=1700-25P$. The second component is the demand for the book by all others. This demand is given by $Q_o=2500-200P$. Derive the total market demand curve for the book. Find the equilibrium market price and quantity. Also, determine the consumer surplus for each component of demand. (10 分)
2. 假設某一城市有 AB 兩家工廠在生產時會產生空氣污染，當地政府制定排放的污染量容許標準為 2500 單位，為有效執行此一政策，當地政府決定為每一單位污染量訂價 P 。假設 A 工廠對於污染量的需求為： $Q_a=1500-0.2*P$ ；B 工廠對於污染量的需求為： $Q_b=1300-0.4*P$ 。請問該政府該如何訂價來達到最適污染量？如果當地政府欲採更嚴格的標準，將容許標準變更為 1500 單位，又該如何訂價？(10 分)
3. 請以經濟角度來闡述你的論點。(每小題 10 分，共 30 分)
 - (a) 某學者觀察各行業失業數據後發現：行業內薪資差異大的行業其失業率普遍大於薪資差異小的行業。你同意嗎？為什麼？
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國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：經濟學丙【企管系甲班碩士班丙組】

題號：4108
共 1 頁 第 1 頁

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2. 請以經濟角度來闡述你的論點。(每小題 10 分，共 20 分)

(a) 你覺得價格愈貴的商品其市場價格差異較大，還是價格較便宜的商品其市場價格差異較大？為什麼？

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科目：經濟學丁【企管系甲班碩士班丁組】

題號：4107
共 1 頁 第 1 頁

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國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4110

共 9 頁 第 1 頁

科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

本份試題共有 50 題選擇題，每題 2 分，計 100 分。

單選題

- (1) A cumulative relative frequency distribution shows
- the proportion of data items with values less than or equal to the upper limit of each class
 - the proportion of data items with values less than or equal to the lower limit of each class
 - the percentage of data items with values less than or equal to the upper limit of each class
 - the percentage of data items with values less than or equal to the lower limit of each class
- (2) If two groups of numbers have the same mean, then
- their standard deviations must also be equal
 - their medians must also be equal
 - their modes must also be equal
 - None of these alternatives is correct.
- (3) When computing the mean of a set of values x_i , the value \bar{x} of x_i
- can never be zero
 - can never be negative
 - must always be positive
 - can be any value
- (4) The hourly wages of a sample of 130 system analysts are given as below:
mean = 60 range = 20
mode = 73 variance = 324
median = 74
The coefficient of variation equals
- 0.30%
 - 30%
 - 5.4%
 - 54%
- (5) A researcher has collected the following sample data
- | | | | | |
|---|----|---|----|---|
| 5 | 12 | 6 | 8 | 5 |
| 6 | 7 | 5 | 12 | 4 |
- The 75th percentile is
- 5
 - 6
 - 7
 - 8

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科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

- (6) In an experiment, events A and B are mutually exclusive. If $P(A) = 0.6$, then the probability of B
- cannot be larger than 0.4
 - can be any value greater than 0.6
 - can be any value between 0 to 1
 - cannot be determined with the information given
- (7) In the textile industry, a manufacturer is interested in the number of blemishes or flaws occurring in each 100 feet of material. The probability distribution that has the greatest chance of applying to this situation is the
- normal distribution
 - binomial distribution
 - Poisson distribution
 - uniform distribution
- (8) The key difference between the binomial and hypergeometric distribution is that with the hypergeometric distribution
- the probability of success must be less than 0.5
 - the probability of success changes from trial to trial
 - the trials are independent of each other
 - the random variable is continuous
- (9) X is a random variable with the probability function:
 $f(X) = X/6$ for $X = 1, 2$ or 3
The expected value of X is
- 0.333
 - 0.500
 - 2.000
 - 2.333
- (10) Z is a standard normal random variable. By not using Z-table, the value of $P(-1.96 \leq Z \leq 1.96)$ can be judged to be closest to
- 0.8942
 - 0.0558
 - 0.475
 - 0.4192
- (11) X is a normally distributed random variable with a mean of 12 and a standard deviation of 3. By not using Z-table, the probability that X equals 19.62 is
- 0.000
 - 0.0055
 - 0.4945
 - 0.9945

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科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

- (12) X is a normally distributed random variable with a mean of 15 and a standard deviation of 3. Not using Z-table, the probability that X greater than or equal to 21 is approximately
- 0.044
 - 0.055
 - 0.022
 - 0.033
- (13) The probability distribution of all possible values of the sample proportion \bar{p} is the
- probability density function of \bar{p}
 - sampling distribution of \bar{x}
 - same as p , since it considers all possible values of the sample proportion
 - sampling distribution of \bar{p}
- (14) A population consists of 500 elements. We want to draw a simple random sample of 50 elements from this population. On the first selection, the probability of an element being selected is
- 0.100
 - 0.010
 - 0.001
 - 0.002
- (15) A population has a mean of 75 and a standard deviation of 8. A random sample of 800 is selected. The expected value of \bar{x} is
- 8
 - 75
 - 800
 - None of these alternatives is correct.
- (16) The purpose of statistical inference is to provide information about the
- sample based upon information contained in the population
 - population based upon information contained in the sample
 - population based upon information contained in the population
 - mean of the sample based upon the mean of the population
- (17) A sample of 25 observations is taken from an infinite population. The sampling distribution of \bar{p} is
- not normal since $n < 30$
 - approximately normal because \bar{p} is always normally distributed
 - approximately normal if $np \geq 5$ and $n(1-p) \geq 5$
 - approximately normal if $np > 30$ and $n(1-p) > 30$
- (18) As a rule of thumb, the sampling distribution of the sample proportions can be approximated by a normal probability distribution whenever
- $np \geq 5$

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科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

- b. $n(1 - p) \geq 5$ and $n \geq 30$
- c. $n \geq 30$ and $(1 - p) = 0.5$
- d. None of these alternatives is correct.

(19) In order to determine an interval for the mean of a population with unknown standard deviation a sample of 61 items is selected. The mean of the sample is determined to be 23. The number of degrees of freedom for reading the t value is

- a. 22
- b. 23
- c. 60
- d. 61

(20) In order to use the normal distribution for interval estimation of μ when σ is known and the sample is very small, the population

- a. must be very large
- b. must have a normal distribution
- c. can have any distribution
- d. must have a mean of at least 1

(21) A 95% confidence interval for a population mean μ is determined to be 100 to 120. If the confidence coefficient is reduced to 0.90, the interval for μ

- a. becomes narrower
- b. becomes wider
- c. does not change
- d. becomes 0.1

(22) The sample size needed to provide a margin of error of 2 or less with a .95 probability when the population standard deviation equals 11 is

- a. 10
- b. 11
- c. 116
- d. 117

(23) A machine that produces a major part for an airplane engine is monitored closely. In the past, 10% of the parts produced would be defective. With a .95 probability, the sample size that needs to be taken if the desired margin of error is .04 or less is

- a. 110
- b. 111
- c. 216
- d. 217

(24) In hypothesis testing,

- a. the smaller the P(Type I error), the smaller the P(Type II error) will be
- b. the smaller the P(Type I error), the larger the P(Type II error) will be
- c. P(Type II error) will not be effected by P(Type I error)
- d. the sum of P(Type I error) and P(Type II error) must equal 1

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共 9 頁 第 5 頁

科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

- (25) For a two-tail test, the p -value is the probability of obtaining a value for the test statistic as
- likely as that provided by the sample
 - unlikely as that provided by the sample
 - likely as that provided by the population
 - unlikely as that provided by the population
- (26) The power curve provides the probability of
- correctly accepting the null hypothesis
 - incorrectly accepting the null hypothesis
 - correctly rejecting the alternative hypothesis
 - correctly rejecting the null hypothesis
- (27) In a two-tailed hypothesis test, the test statistic is determined to be $t = -2.692$. The sample size has been 45. The p -value for this test can be judged closest to
- 0.005
 - +0.005
 - 0.01
 - +0.01
- (28) The average monthly rent for one-bedroom apartments in Chattanooga has been \$700. Because of the downturn in the real estate market, it is believed that there has been a decrease in the average rental. The correct hypotheses to be tested are
- $H_0: \mu \geq 700$ vs. $H_a: \mu < 700$
 - $H_0: \mu = 700$ vs. $H_a: \mu \neq 700$
 - $H_0: \mu > 700$ vs. $H_a: \mu \leq 700$
 - $H_0: \mu < 700$ vs. $H_a: \mu \geq 700$
- (29) $n = 49$ $\bar{x} = 54.8$ $s = 28$ $H_0: \mu \leq 50$
 $H_a: \mu > 50$
- The test statistic is
- 0.1714
 - 0.3849
 - 1.2
 - 1.2
- (30) If we are interested in testing whether the proportion of items in population 1 is larger than the proportion of items in population 2, the
- null hypothesis should state $p_1 - p_2 < 0$
 - null hypothesis should state $p_1 - p_2 > 0$
 - alternative hypothesis should state $p_1 - p_2 > 0$
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共 9 頁 第 6 頁

科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

(31) The standard error of $\bar{x}_1 - \bar{x}_2$ is the

- a. variance of $\bar{x}_1 - \bar{x}_2$
- b. variance of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
- c. standard deviation of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
- d. difference between the two means

(32) The following information was obtained from matched samples.

Individual	Method 1	Method 2
1	7	5
2	5	9
3	6	8
4	7	7
5	5	6

The point estimate for the difference between the means of the two populations (Method 1 - Method 2) is

- a. -1
- b. 0
- c. -4
- d. 2

(33) Referring to problem (32), the null hypothesis tested is $H_0: \mu_d = 0$. The test statistic for the difference between the two population means is

- a. 2
- b. 0
- c. -1
- d. -2

(34) Referring to problems (32) and (33), if the null hypothesis is tested at the 5% level, the null hypothesis

- a. should be rejected
- b. should not be rejected
- c. should be revised
- d. None of these alternatives is correct.

(35) Which of the following has an F distribution?

- a. $(n-1)S^2/\sigma^2$
- b. $(n_1-1)S_1^2/(n_2-1)S_2^2$
- c. $(n-1)\sigma^2/S^2$
- d. S_1^2/S_2^2

(36) The sampling distribution used when making inferences about a single population's variance is

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- a. an F distribution
- b. a t distribution
- c. a Chi-Square distribution
- d. a normal distribution

(37) A sample of 61 observations yielded a sample standard deviation of 6. If we want to test $H_0: \sigma^2 = 40$, the test statistic is

- a. 54
- b. 9.15
- c. 54.90
- d. 9

(38) The number of degrees of freedom for the appropriate Chi-Square distribution in a test of independence is

- a. $n-1$
- b. $k-1$
- c. number of rows minus 1 times number of columns minus 1
- d. a Chi-Square distribution is not used

(39) The table below gives beverage preferences for random samples of teens and adults.

	Teens	Adults	Total
Coffee	50	200	250
Tea	100	150	250
Soft Drink	200	200	400
Other	<u>50</u>	<u>50</u>	<u>100</u>
	400	600	1,000

We are asked to test for independence between age (i.e., adult and teen) and drink preferences. The expected number of adults who prefer coffee is

- a. 0.25
- b. 0.33
- c. 150
- d. 200

(40) Referring to problem (39), the test statistic for this test of independence is

- a. 0
- b. 8.4
- c. 62.5
- d. 82.5

(41) The variable of interest in an ANOVA procedure is called

- a. a partition
- b. a treatment
- c. either a partition or a treatment
- d. a factor

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(42) In an analysis of variance problem involving 3 treatments and 10 observations per treatment, $SSE = 399.6$. The MSE for this situation is

- a. 133.2
- b. 13.32
- c. 14.8
- d. 30.0

(43) When an analysis of variance is performed on samples drawn from k populations, the mean square between treatments $MSTR$ is

- a. $SSTR/n_T$
- b. $SSTR/(n_T - 1)$
- c. $SSTR/k$
- d. $SSTR/(k - 1)$

(44) In ANOVA, which of the following is not affected by whether or not the population means are equal?

- a. \bar{x}
- b. between-samples estimate of σ^2
- c. within-samples estimate of σ^2
- d. None of these alternatives is correct.

(45) A randomized block design ANOVA table is demonstrated as below.

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between Treat.	2,073.6	5		
Between Blocks	6,000	6	1,000	
Error		30	288	
Total		41		

The null hypothesis for this ANOVA problem is

- a. $\mu_1 = \mu_2 = \mu_3 = \mu_4$
- b. $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$
- c. $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6$
- d. $\mu_1 = \mu_2 = \dots = \mu_{20}$

(46) Referring to problem (45), the sum of squares due to error equals

- a. 14.4
- b. 2,073.6
- c. 5,760
- d. 8,640

(47) Referring to problem (45), the test statistic to test the null hypothesis equals

- a. 0.415
- b. 1.834
- c. 4.173
- d. 28.88

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4110

共 9 頁 第 9 頁

科目：商用統計學丁〔企管系甲班碩士班丁組選考〕

(48) You are given the following information about y and x.

y Dependent Variable	x Independent Variable
5	1
4	2
3	3
2	4
1	5

The least squares estimate of b_1 (slope) equals

- a. 1
- b. -1
- c. 6
- d. 5

(49) Referring to problem (48), the least squares estimate of b_0 (intercept) equals

- a. 1
- b. -1
- c. 6
- d. 5

(50) In simple linear regression analysis, which of the following is **not** true?

- a. The F test and the t test yield the same conclusion.
- b. The F test and the t test may or may not yield the same conclusion.
- c. The relationship between X and Y is represented by means of a straight line.
- d. The value of $F = t^2$.

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111

共 9 頁 第 1 頁

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

本份試題共有 50 題選擇題，每題 2 分，計 100 分。

單選題

- (1) A histogram is
 - a. a graphical presentation of a frequency or relative frequency distribution
 - b. a graphical method of presenting a cumulative frequency or a cumulative relative frequency distribution
 - c. the history of data elements
 - d. the same as a pie chart
- (2) In a cumulative percent frequency distribution, the last class will have a cumulative percent frequency equal to
 - a. One
 - b. 100
 - c. the total number of elements in the data set
 - d. None of these alternatives is correct.
- (3) The sum of deviations of the individual data elements from their mean is
 - a. always greater than zero
 - b. always less than zero
 - c. sometimes greater than and sometimes less than zero, depending on the data elements
 - d. always equal to zero
- (4) The numerical value of the variance
 - a. is always larger than the numerical value of the standard deviation
 - b. is always smaller than the numerical value of the standard deviation
 - c. is negative if the mean is negative
 - d. can be larger or smaller than the numerical value of the standard deviation
- (5) The variance of a sample was reported to be 144. The report indicated that $\sum (x - \bar{x})^2 = 7200$. What has been the sample size?
 - a. 49
 - b. 50
 - c. 51
 - d. 52
- (6) If $P(A) = 0.45$, $P(B) = 0.55$, and $P(A \cup B) = 0.78$, then $P(A | B) =$
 - a. zero
 - b. 0.45
 - c. 0.22
 - d. 0.40

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111

共 9 頁 第 2 頁

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

(7) The number of electrical outages in a city varies from day to day. Assume that the number of electrical outages (x) in the city has the following probability distribution.

X	f(x)
0	0.80
1	0.15
2	0.04
3	0.01

The mean and the standard deviation for the number of electrical outages (respectively) are

- a. 0.26 and 5.77
- b. 0.26 and 0.577
- c. 0.26 and 0.01
- d. 0 and 0.8

(8) Twenty percent of the students in a class of 100 are planning to go to graduate school. The standard deviation of this binomial distribution is

- a. 20
- b. 16
- c. 4
- d. 2

(9) A production process produces 2% defective parts. A sample of five parts from the production process is selected. What is the probability that the sample contains exactly two defective parts?

- a. 0.0004
- b. 0.0038
- c. 0.10
- d. 0.02

(10) For a continuous random variable X , the probability density function $f(x)$ represents

- a. the probability at a given value of x
- b. the area under the curve at x
- c. the area under the curve to the right of x
- d. the height of the function at x

(11) When a continuous probability distribution is used to approximate a discrete probability distribution

- a. a value of 0.5 is added and/or subtracted from the area
- b. a value of 0.5 is added and/or subtracted from the value of x
- c. a value of 0.5 is added to the area
- d. a value of 0.5 is subtracted from the area

(12) Z is a standard normal random variable. Not using Z -table, $P(-1 \leq Z \leq 1)$ can be judged to be closest to

- a. 0.8942
- b. 0.0558

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111

共 9 頁 第 3 頁

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

- c. 0.675
d. 0.7192
- (13) X is a normally distributed random variable with a mean of 20 and a standard deviation of 4. Not using Z-table, the probability that X greater than or equal to 28 is approximately
- a. 0.044
b. 0.055
c. 0.022
d. 0.033
- (14) Sampling distribution of \bar{x} is the
- a. probability distribution of the sample mean
b. probability distribution of the sample proportion
c. mean of the sample
d. mean of the population
- (15) The standard deviation of a sample of 100 elements taken from a very large population is determined to be 60. The variance of the population
- a. can not be larger than 60
b. can not be larger than 3600
c. must be at least 100
d. can be any value greater or equal to zero
- (16) A theorem that allows us to use the normal probability distribution to approximate the sampling distribution of sample means and sample proportions whenever the sample size is large is known as the
- a. approximation theorem
b. normal probability theorem
c. central limit theorem
d. central normality theorem
- (17) Random samples of size 81 are taken from an infinite population whose mean and standard deviation are 200 and 18, respectively. The distribution of the population is unknown. The mean and the standard error of the mean are
- a. 200 and 18
b. 81 and 18
c. 9 and 2
d. 200 and 2
- (18) Random samples of size 525 are taken from an infinite population whose population proportion is 0.3. The standard deviation of the sample proportions (i.e., the standard error of the proportion) is
- a. 0.0004
b. 0.2100
c. 0.3000
d. 0.0200

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

- (19) The absolute value of the difference between the point estimate and the population parameter it estimates is
- the standard error
 - the sampling error
 - the margin of error
 - the error of confidence
- (20) A population has a standard deviation of 50. A random sample of 100 items from this population is selected. The sample mean is determined to be 600. At 95% confidence, not using Z-table, the margin of error can be found to be
- 5
 - 9.8
 - 650
 - 609.8
- (21) For which of the following values of p (population proportion) is the value of $p(1 - p)$ maximized?
- $p = 0.99$
 - $p = 0.90$
 - $p = 0.01$
 - $p = 0.50$
- (22) Using $\alpha = 0.04$, a confidence interval for a population proportion is determined to be 0.65 to 0.75. If the level of significance is decreased, the interval for the population proportion
- becomes narrower
 - becomes wider
 - does not change
 - remains the same
- (23) Whenever using the t distribution for interval estimation (when the sample size is very small), we must assume that
- the sample has a mean of at least 30
 - the sampling distribution is not normal
 - the population is approximately normal
 - the finite population correction factor is necessary
- (24) In a sample of 400 voters, 360 indicated they favor the incumbent governor. The 95% confidence interval of voters **not** favoring the incumbent is
- 0.871 to 0.929
 - 0.120 to 0.280
 - 0.765 to 0.835
 - 0.071 to 0.129

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111
共 9 頁 第 6 頁

科目：商用統計學丙 [企管系甲班碩士班丙組選考]

- a. is restricted to small sample situations
- b. is not restricted to small sample situations
- c. can be applied when the populations have equal means
- d. None of these alternatives is correct.

(32) Salary information regarding male and female employees of a large company is shown below.

	Male	Female
Sample Size	64	36
Sample Mean Salary (in \$1,000)	44	41
Population Variance (σ^2)	128	72

The standard error for the difference between the two means is

- a. 4
 - b. 7.46
 - c. 4.24
 - d. 2.0
- (33) In order to determine whether or not there is a significant difference between the hourly wages of two companies, the following data have been accumulated.

	Company A	Company B
Sample size	80	60
Sample mean	\$16.75	\$16.25
Population standard deviation	\$1.00	\$0.95

The test statistic is

- a. 0.098
 - b. 1.645
 - c. 2.75
 - d. 3.01
- (34) Referring to problem (33), the p -value is judged closest to
- a. 0.0013
 - b. 0.0026
 - c. 0.0042
 - d. 0.0084

(35) To avoid the problem of not having access to tables of the F distribution with values given for the lower tail when a two-tailed test is required, let the smaller sample variance be

- a. the denominator of the test statistic
- b. the numerator of the test statistic
- c. at least one
- d. None of these alternatives is correct.

(36) The sampling distribution of the ratio of two independent sample variances taken from normal populations with equal variances is

- a. an F distribution
- b. a Chi-Square distribution

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111

共 9 頁 第 7 頁

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

- c. a t distribution
- d. a normal distribution

(37) A sample of 60 items from population 1 has a sample variance of 8 while a sample of 40 items from population 2 has a sample variance of 10. If we test whether the variances of the two populations are equal, the **test statistic** will have a value of

- a. 0.8
- b. 1.56
- c. 1.5
- d. 1.25

(38) A goodness of fit test is always conducted as a

- a. lower-tail test
- b. upper-tail test
- c. middle test
- d. None of these alternatives is correct.

(39) In order not to violate the requirements necessary to use the chi-square distribution, each expected frequency in a goodness of fit test must be

- a. at least 5
- b. at least 10
- c. no more than 5
- d. less than 2

(40) The degrees of freedom for a contingency table with 10 rows and 11 columns is

- a. 100
- b. 110
- c. 21
- d. 90

(41) Last school year, the student body of a local university consisted of 30% freshmen, 24% sophomores, 26% juniors, and 20% seniors. A sample of 300 students taken from this year's student body showed the following number of students in each classification.

Freshmen	83
Sophomores	68
Juniors	85
Seniors	64

We are interested in determining whether or not there has been a significant change in the classifications between the last school year and this school year. The expected number of freshmen is

- a. 83
- b. 90
- c. 30
- d. 10

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111
共 9 頁 第 8 頁

科目：商用統計學丙 [企管系甲班碩士班丙組選考]

(42) Referring to problem (41), the calculated value for the test statistic equals

- a. 0.5444
- b. 300
- c. 1.6615
- d. 6.6615

(43) In factorial designs, the response produced when the treatments of one factor interact with the treatments of another in influencing the response variable is known as

- a. main effect
- b. replication
- c. interaction
- d. None of these alternatives is correct.

(44) An ANOVA procedure is applied to data obtained from 6 samples where each sample contains 20 observations. The degrees of freedom for the critical value of F are

- a. 6 numerator and 20 denominator degrees of freedom
- b. 5 numerator and 20 denominator degrees of freedom
- c. 5 numerator and 114 denominator degrees of freedom
- d. 6 numerator and 20 denominator degrees of freedom

(45) A randomized block design ANOVA table is demonstrated as below.

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F
Between Treat.	2,073.6	4		
Between Blocks	6,000	5	1,200	
Error		20	288	
Total		29		

The null hypothesis for this ANOVA problem is

- a. $\mu_1 = \mu_2 = \mu_3 = \mu_4$
- b. $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$
- c. $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6$
- d. $\mu_1 = \mu_2 = \dots = \mu_{20}$

(46) Referring to problem (45), the sum of squares due to error equals

- a. 14.4
- b. 2,073.6
- c. 5,760
- d. 6,000

(47) Referring to problem (45), the test statistic to test the null hypothesis equals

- a. 0.432
- b. 1.8
- c. 4.17
- d. 28.8

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

題號：4111

共 9 頁 第 9 頁

科目：商用統計學丙〔企管系甲班碩士班丙組選考〕

(48) In a regression analysis, the coefficient of determination is 0.4225. The coefficient of correlation in this situation is

- a. 0.65
- b. 0.1785
- c. any positive value
- d. any value

(49) The following information regarding a dependent variable (Y) and an independent variable (X) is provided.

Y	X
4	2
3	1
4	4
6	3
8	5

$$SSR = 10 \quad SST = 16$$

The least squares estimate of the Y intercept is

- a. 1
- b. 2
- c. 3
- d. 4

(50) Referring to problem (49), the MSE is

- a. 1
- b. 2
- c. 3
- d. 4

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：微積分丁【企管系甲班碩士班丁組選考】

題號：4112

共 1 頁 第 1 頁

請依題號順序作答，違者扣分。

1. Find the derivatives for the following functions. 20%

i. $f(x) = \frac{1}{1+e^{-x}}$ ii. $y = e^{-\pi} + \pi^{-e}$ iii. $f(x) = \frac{x}{\sin^2 x}$

iv. Find dy/dx where $\sin(3y) + \cos(5x) = xy$

2. Sketch the function $f(x) = x + \sin x, (0 \leq x \leq 2\pi)$ 20%

Indicate

- i. the critical points,
- ii. the reflection point(s),
- iii. the global maxima and minima,
- iv. the increasing and decreasing and concavity of the function

3. Evaluate the following. 25 %

i. $\int xe^{-x^2} dx$ ii. $\int_2^3 \ln x dx$ iii. $\lim_{x \rightarrow \infty} xe^{-x}$ iv. $\int_0^6 \int_{x/3}^2 x\sqrt{y^3+1} dy dx.$

v. $\int_e^{\infty} x^p \ln x dx$, indicate the value of p so that the integral converges.

4. Determine if the following sequences converge. 10%

i. $\sum_{n=1}^{\infty} \frac{n-5}{n^3+8}$ ii. $\sum_{n=1}^{\infty} \cos\left(\frac{1}{n}\right)$

5. By looking at their Taylor series, decide which of the following functions is the largest and which is the smallest, for x near 0. 15%

i. e^x ii. $1 + \sin x$ iii. $\frac{1}{\sqrt{1-2x}}$

6. 某宅配公司的運費以包裹的長寬高長度總和來計價。如果某包裹的長寬高的長度總和限制在 60 公分的話，請問此包裹的最大容量為何？（請列出計算過程）10%

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：微積分丙【企管系甲班碩士班丙組選考】

題號：4113
共 1 頁 第 1 頁

請依題號順序作答，違者扣分。

1. Find the derivatives for the following functions. 20%

i. $f(x) = \frac{1}{1+e^{-x}}$ ii. $y = e^{-\pi} + \pi^{-e}$ iii. $f(x) = \frac{x}{\sin^2 x}$

iv. Find dy/dx where $\sin(3y) + \cos(5x) = xy$

2. Sketch the function $f(x) = e^{-x} \sin x, (0 \leq x \leq 2\pi)$. 20%

Indicate

- i. the critical points,
- ii. the reflection point(s),
- iii. the global maxima and minima,
- iv. the increasing and decreasing and concavity of the function

3. Evaluate the following. 30 %

i. $\int x e^{-x^2} dx$ ii. $\int_2^3 \ln x dx$ iii. $\int_1^{\infty} \frac{dx}{5x+2}$

iv. $\int_0^6 \int_{x/3}^2 x \sqrt{y^3+1} dy dx$ v. $\lim_{x \rightarrow \infty} x e^{-x}$

vi. Determine if the sequences converge a. $\sum_{n=1}^{\infty} \frac{n-5}{n^3+8}$ b. $\sum_{n=1}^{\infty} \sin\left(\frac{1}{n}\right)$

4. By looking at their Taylor series, decide which of the following functions is the largest and which is the smallest, for x near 0. 15%

i. e^x ii. $1 + \sin x$ iii. $\frac{1}{\sqrt{1-2x}}$

5. While taking a walk along the road where you live, you accidentally drop your i-pad, but you don't know where. The probability density $p(x)$ for having dropped the i-phone x kilometers from home (along the road) is $p(x) = e^{-x}$ for $x \geq 0$. 15%

- i. What is the probability that you dropped it within 1 kilometer of home?
- ii. At what distance y from home is the probability that you dropped it within y km of home equal to 0.95

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：管理學乙【企管系甲班碩士班乙組】

題號：4114

共 3 頁 第 1 頁

請勿於試題紙上作答

一、申論題 (以下每題 20%，總計 40%)

1. 在一堂課堂中，張三和李四正在吵架。張三說：「企業必需要專注在本業上，才能夠不斷地發展，永續地經營，因此不要隨便涉足其他的事業。」李四則說：「老祖宗的智慧告訴我們，別把雞蛋放在同一個籃子裡，因此企業應該要以多角化的方式分散風險」。請問你比較贊同張三還是李四的觀點，並說明原因。
2. 行政管理學派 (Administrative Management School) 的學者 (例如德國社會學家 Max Weber)，主張權力來自於權力層級體系下的職位。但人本學派 (Humanistic Management School) 的學者 (例如美國學者 Mary P. Follett) 則認為，權力應該來自於管理者的經驗與知識。請問你比較贊成何種學派的看法？並說明原因。

二、請解釋以下名詞 (以下每題 5%，總計 30%)

1. ECFA 的中、英文全稱和意義
2. IFRS 的中、英文全稱和意義
3. FTA 與 TPP 的中、英文全稱和意義
4. BRIC 的中、英文全稱和意義
5. Diversification 的中、英文全稱和意義
6. Stakeholders 的中、英文全稱和意義

三、管理個案分析 (30%)

按稅捐債務係法定之債，只要符合稅法所定之構成要件，債務立即發生；反面言之，只要未實現任何法律所定稅捐債務之構成要件，即不發生稅捐債務。近年工商實務有《最高行政法院 96 年度判字第 410 號判決》（下文簡稱《第 410 號判決》），其「案例事實」摘要如下：

『宏仁醫院為專注診療工作，將有關醫療設備、生財器具及什項設備等售予護康公司，由其負責保養、維護，並於同時以承租方式租回該設備，護康公司事後應配合宏仁醫院醫療需要，配合增添設備、維修，故宏仁醫院給付租金，以節省設備更新汰舊及維修成本。上訴人民國（下同）87 年度綜合所得稅結算申報，列報醫療設備租金新台幣（下同）4,800,000 元。

稅捐稽徵機關認上訴人既主張系爭出售予護康公司之設備已逾耐用年限，且醫療設備淘汰率高，而該醫院卻仍能以高價出售，並以高價租金再租回以認列租金支出，亦足見該醫院係以非常規交易規避該醫院之稅捐。故稅捐稽徵機關將售後租回資產有效使用年限內認列折舊 1,767,406 元，剔除醫療設備租金 4,800,000 元，歸課綜合所得總額 9,350,367 元，補徵應納稅額 2,818,763 元。』

該《第 410 號判決》對於醫療設備租賃有關之日常經驗法則，有特別說明：

- (1) 由於現行動產擔保交易法所規範之交易類型，只限於「生產者缺乏購入固定資產之資金，所以透過附條件買賣、動產擔保或融資租賃等法律交易模式，以融資方式獲得生產活動所須之固定資產，從事生產，以獲利來清償融資者本息」之情形。
- (2) 然而，真實商業世界之融資態樣卻極為多元，尚且包括「生產者有固定資產，可是缺少買入變動生產要素（例如原料）所須資金，所以先將手中之固定資產出售予融資者，以獲取生產資金。再以附條件買賣、動產擔保或融資租賃等法律交易模式，取得固定資產之使用權而繼續從事生產活動，以獲利來清償融資者本息」之情形。而後者卻很容易被普通法院（民、刑事法院）誤會為「通謀虛偽意思表示」。
- (3) 在本案中醫療設備之「售後租回」，正是此等形態，即未必是虛偽不實的。』

因為肯定前述的法律交易模式的多元態樣，該《第410號判決》緊接著敘明：

『原判決認定上訴人上開交易違反交易常規，又稱「財產目錄不實」云云，則本案到底是「租賃契約為虛偽」之事實認定問題，還是「稅捐規避」之法律適用問題，未見說明。且原判決認為上開安排在規避稅負，卻未將「移轉計價」與「稅捐規避」概念之差異予以釐清。更未注意到醫療設備租賃契約一樣有實質經濟功能，因此經驗法則上，一個交易行為可能同時存在「稅捐規避」與「真實交易」之目的，必須透過「移轉計價」之手段來調整，而移轉計價之法規範基礎及其應具備之構成要件也未見原判決有所檢討。』

依學理上之通說，稅捐規避在稅捐法制上之法律效果為「私法外衣之否認」，即檢驗司法形式下實質的法律效應；請簡答以下三個問題：

1. 本案中的醫療設備租賃利用債之效力與契約等技術運用，是否違法？（3%）
請摘取以上判決中的文字述明您的理由（7%）。
2. 請對於「移轉計價」寫出英文名詞，並直接定義（8%）。
3. 請分析國際間各國針對關係企業「移轉計價」操作的管理政策工具有哪些？
（12%）

該《第 410 號判決》對於醫療設備租賃有關之日常經驗法則，有特別說明：

- (1) 由於現行動產擔保交易法所規範之交易類型，只限於「生產者缺乏購入固定資產之資金，所以透過附條件買賣、動產擔保或融資租賃等法律交易模式，以融資方式獲得生產活動所須之固定資產，從事生產，以獲利來清償融資者本息」之情形。
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- (3) 在本案中醫療設備之「售後租回」，正是此等形態，即未必是虛偽不實的。』

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- (1) 本案中的醫療設備租賃利用債之效力與契約等技術運用，是否違法？
(3%) 請摘取以上判決中的文字述明您的理由 (7%)。
- (2) 請對於「移轉計價」寫出英文名詞，並直接定義 (8%)。
- (3) 請分析國際間各國針對關係企業「移轉計價」操作的管理政策工具有哪些？ (12%)

請勿於試題紙上作答

一、請解釋以下名詞（以下每題 5%，共計 30%）

1. ECFA 的中、英文全稱和意義
2. IFRS 的中、英文全稱和意義
3. FTA 與 TPP 的中、英文全稱和意義
4. BRIC 的中、英文全稱和意義
5. Diversification 的中、英文全稱和意義
6. Stakeholders 的中、英文全稱和意義

二、申論題（以下每題 20%，共計 40%）

1. 在金庸的射雕三部曲中，傳達出兩種相反的武學理念，郭襄認為「先發制人，後發制於人」，但覺遠認為「後發制人，先發制於人」。請從策略管理的角度對這兩種武學理念加以評析，並說明你贊同郭襄還是覺遠的觀點？
2. 你認為領導能力是天生的還是可以透過後天養成的？

三、管理個案分析（30%）

按稅捐債務係法定之債，只要符合稅法所定之構成要件，債務立即發生；反面言之，只要未實現任何法律所定稅捐債務之構成要件，即不發生稅捐債務。近年工商實務有《最高行政法院 96 年度判字第 410 號判決》（下文簡稱《第 410 號判決》），其「案例事實」摘要如下：

『宏仁醫院為專注診療工作，將有關醫療設備、生財器具及什項設備等售予護康公司，由其負責保養、維護，並於同時以承租方式租回該設備，護康公司事後應配合宏仁醫院醫療需要，配合增添設備、維修，故宏仁醫院給付租金，以節省設備更新汰舊及維修成本。上訴人民國（下同）87 年度綜合所得稅結算申報，列報醫療設備租金新台幣（下同）4,800,000 元。

稅捐稽徵機關認上訴人既主張系爭出售予護康公司之設備已逾耐用年限，且醫療設備淘汰率高，而該醫院卻仍能以高價出售，並以高價租金再租回以認列租金支出，亦足見該醫院係以非常規交易規避該醫院之稅捐。故稅捐稽徵機關將售後租回資產有效使用年限內認列折舊 1,767,406 元，剔除醫療設備租金 4,800,000 元，歸課綜合所得總額 9,350,367 元，補徵應納稅額 2,818,763 元。』